

### **REMARKS**

Applicant has carefully reviewed and considered the Office Action mailed on June 3, 2003. No claims are amended, canceled or added. Claims 38-74 remain pending in this application.

#### **Telephone Interview on July 29, 2003**

A Telephone Interview was conducted on July 29, 2003 between Examiner Peralta and Applicant's below-named representative to discuss the §112 Rejection. An agreement was not reached. Applicant thanks the Examiner for the courtesy extended in conducting the interview and in discussing and clarifying her position.

#### **§112 Rejection of the Claims**

Claims 41-65 and 69-74 were rejected under 35 USC § 112, first paragraph, as failing to comply with the written description requirement. Applicant respectfully traverses the rejection for at least the following reasons. Applicant respectfully asserts that the rejection improperly reduces the written description requirement to require a specific recitation of "a tungsten nitride layer that includes silicon."

The rejection states:

*The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant's disclosure does not teach a tungsten nitride layer that includes silicon. **Throughout the specification there is no recitation of a tungsten nitride layer that includes silicon.** (Emphasis Added)*

Paragraph 6 of the Office Action includes a response to previous arguments, and states:

*With regards to applicant's argument that the method taught in the specification results in a tungsten nitride layer including silicon, it is noted that **there is no***

single statement in the specification that reads that the layer formed is a “tungsten nitride layer including silicon”, therefore the disclosure does not provide for a tungsten nitride layer that includes silicon. Even though the specification clearly indicates that the source gas includes silicon, there is no clear recitation that the tungsten nitride layer includes silicon. (Emphasis Added).

The purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the application for a patent is therefore required to recount his invention in such detail that his future claims can be determined to be encompassed within his original creation. *Moba, B.V., Staalkat, B.V., and FPS Food Processing Systems, Inc., v. Diamond Automation, Inc.*, 325 F.3d 1306 (Fed. Cir. 2003), citing *Amgen Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003). The written description requirement maybe satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure. *Moba*, 325 F.3d at 1320, citing *Amgen*, 314 F.3d at 1332. Compliance with § 112 has always required sufficient information in the original disclosure to show that the inventor possessed the invention at the time of the original filing. The possession test requires assessment from the viewpoint of one of skill in the art. The written description requirement does not require the applicant to describe exactly the subject matter claimed, instead the description must clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed. *Moba*, 325 F.3d at 1320-1321.

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. *In re Kaslow*, 707 F.2d 1366 (Fed. Cir. 1983). The fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. MPEP § 2163.02. It is not necessary that the application describe the claimed invention in *ipsis verbis* . . . . *In re Edwards*, 568 F.2d 1349 (C.C.P.A. 1978). The claimed subject matter need not be described in *haec verba* (Latin for “in

these words" which refers to stating the exact language) to satisfy the description requirement. It is not necessary that the application describe the claimed limitations exactly . . . . In re Herschler, 591 F.2d 693 (C.C.P.A. 1979). See also MPEP §2163.02. The originally filed disclosure can expressly, implicitly, or inherently support the claim limitations. MPEP §2163.

Applicant respectfully asserts that the rejection improperly reduces the written description requirement to require a specific recitation of "a tungsten nitride layer including silicon." The case law and the MPEP clearly indicate that the written description requirement can be satisfied without using the exact term used in the claim. Rather, the written description requirement is satisfied if the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, Applicant was in possession of the invention as now claimed.

Applicant asserts that, while the specification may not recite verbatim "a tungsten nitride layer that includes silicon", the text of the specification does support a tungsten nitride layer that includes silicon because it implicitly or inherently conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, Applicant was in possession of the invention as now claimed. The tungsten nitride is chemically vapor deposited from a source gas comprising a silicon based gas (page 3 lines 9-10, page 5 lines 4-5). The specification identifies tungsten sources, nitrogen sources, and silicon sources for the source gas (page 6 lines 3-9). Additionally, the specification identifies pressures, temperatures and flow rates (page 6 line 9 to page 7 line 8).

The specification clearly distinguishes source gases from carrier gases (page 4, lines 8-11) and indicates that the source gas includes silicon. For example, the specification indicates that the source gas comprises a silicon based gas (page 6 lines 7-9), and that silane or other silicon based gas is added to the source gas mixture at a flow rate that falls within a specific range of the total flow rate of the source gas (page 6 line 20 to page 7 line 8). Furthermore, the source gas is maintained at a pressure conducive to chemical vapor deposition (page 6 lines 9-10). Additionally, the specification indicates that the addition of silane or other silicon-based gas reduces encroachment into any silicon based materials exposed to the tungsten nitride, improves adhesion of the tungsten nitride to its underlying layer, and reduces the bulk resistivity of the tungsten nitride (page 7 lines 1-5). Thus, the addition of the silicon-based gas directly affects the deposited layer.

Chemical vapor deposition (CVD) is well-known to those of ordinary skill in the semiconductor art. Given the source gas mixture including a silicon based gas (e.g. Abstract) for a CVD process and the distinction between source gases and carrier gases (page 4, lines 8-14) identified in the specification, the specification reasonably conveys to one of ordinary skill in the art that the inventor had possession of the claimed invention at the time of the original disclosure. With respect to a source gas comprising tungsten hexafluoride ( $WF_6$ ), ammonia and silane, for example, Applicant respectfully asserts that, upon reading and comprehending the application, one of ordinary skill in the art would understand that the silane ( $SiH_4$ ) catalyzes the reduction of  $WF_6$  and would further understand that the  $SiH_4$  does not react to form  $WSi_x$  preferentially over  $WN_x$  but rather  $WN_x$  is preferentially formed over  $WSi_x$ . Thus, the resulting film is a tungsten nitride film. Additionally, upon reading and comprehending the application, one of ordinary skill in the art would understand that the  $SiH_4$  in the system causes Si to incorporate in the film because there are competing reaction pathways that leave Si bonded to W in the film. The amount of Si bonded to W in the tungsten nitride film is at a low level, depending on the conditions selected, but the film would include silicon in any case. Thus, the resulting tungsten nitride film includes silicon.

Thus, Applicant asserts that the written description requirement has been met, and respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

#### §103 Rejection of the Claims

Claims 38-40 were rejected under 35 USC § 103(a) as being unpatentable over Matsushashi. Applicant respectfully traverses the single reference rejection under § 103. Should the Examiner maintain the rejection, Applicant requests the Examiner to cite references in support of the rejection pursuant to M.P.E.P. 2144.03.

With respect to independent claim 38, Applicant is unable to find, among other things, in the Matsushashi reference a showing or suggestion of a capacitor comprising a second electrode formed of chemically vapor deposited tungsten nitride in which the tungsten nitride is formed using a gas comprising nitride, tungsten and silicon, as recited in the claim. This process results in a tungsten nitride layer that includes silicon. The silicon reduces encroachment into any

silicon based materials exposed to the tungsten nitride, improves adhesion of the tungsten nitride to its underlying layer, and reduces the bulk resistivity of the tungsten nitride (Specification at page 7, lines 1-4). Claims 39 - 40 depend on independent claim 38, and further define the present subject matter. Thus, claims 39 - 40 are believed to be patentable at least for the reasons provided with respect to claim 38.

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

*Allowable Subject Matter*

Claims 66-68 were allowed.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 373-6960) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

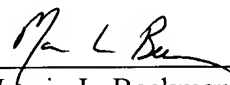
Respectfully submitted,

SCOTT G. MEIKLE ET AL.

By their Representatives,

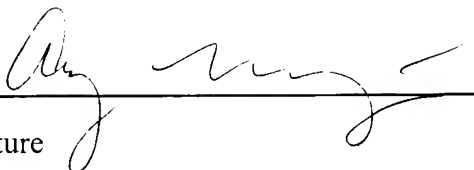
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Date 9-3-03

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 3rd day of September, 2003.

Amy Moriarty  
Name

  
Signature